MIL-E-1/757J
21 November 1973
SUPERSEDING
MIL-E-1/757H
17 November 1967

MILITARY SPECIFICATION SHEET

(J) ELECTRON TUBE, THYRATRON

TYPE 5643

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The complete requirements for procuring the electron tube described herein shall consist of this document and the latest issue of Specification MIL-E-1.

DESCRIPTION: Tetrode

Outline:	---	3-1
Base	---	B8-10
Envelope	---	T3
Mounting position	---	Any
Weight	---	0.12 ounce nominal

Base connections:

Pin No.	---	1	2	3	4	5	6	7	8
Element	---	a	g2	h	g2	k	h	gl	g2

ABSOLUTE RATINGS:

Parameter:	Ef	epx	epy	Ec1	Ec2	Ehk	tk	ib	Ik	TA	(J) Alt
Unit:	V	v	v	Vdc	Vdc	Vdc	sec	ma	mAdc	°C	ft
Maximum:	6.6	500	500	---	---	+25	---	100	16	+100	---
Minimum:	6.0	---	---	-200	-100	-100	10	---	--	-55	See Note 1
TEST CONDITIONS:	6.3	---	---	---	0	0	---	---	---	---	---

GENERAL: (J)

Qualification - Required

Reliable tubes

(J) DENOTES CHANGE

5643

FSC 5960

METHOD	REQUIREMENT OR TEST	CONDITIONS	AQL (PERCENT DEFECTIVE)	INSP LEVEL OR CODE	SYMBOL	LIMITS						UNIT
						MIN	LAL	DOGEY	UAL	MAX	ALD	
(J)	Quality conformance inspection, part 1 (See note 8)											
Appendix D 30(a), 40	Visual and mechanical inspection criteria		---	---	---	---	---	---	---	---	---	---
Appendix D, 30(b)	Dimensions	Outline 3-1; dimensions A thru E	1.0	I	---	---	---	---	---	---	---	---
1201	Short and discontinuity detection (for reliable tubes)		0.4	II	---	---	---	---	---	---	---	---
3241	Heater current		---	---	If	---	144	150	156	---	12	mA
3241	Heater current		0.65	II	If	140	---	---	---	160	---	mA
1336	Heater-cathode leakage	Ehk = +25 Vdc	0.65	II	+Ihk	---	---	---	---	10	---	μAdc
		Ehk = -100 Vdc			-Ihk	---	---	---	---	10	---	μAdc
3201	Critical grid voltage for conduction (1)	Epp = 350 Vac; Rgl = 10 Meg; Rp = 10,000 ohms See note 2	0.65	II	Eccl	-2.0	---	---	---	-4.0	---	Vdc
3201	Critical grid voltage for conduction (2)	Epp = 350 Vac; Rgl = 10 Meg; Rp = 10,000 ohms	0.65	II	Eccl	---	---	---	---	-6.0	---	Vdc
3201 (J)	Critical anode voltage for conduction	Vary Ebb; Eccl = 0; Rgl = 0.1 Meg; Rp = 10,000 ohms	0.65	II	Ebb	---	---	---	---	26	---	Vdc
	Quality conformance inspection, part 2											
1116	Lead fatigue		2.5	Code F	---	---	---	---	---	---	---	arcs
2126	Glass strain	See note 3	6.5	I	---	---	---	---	---	---	---	---
1041	Shock	450G	---	---	---	---	---	---	---	---	---	---
1231	Pulse emission	e = 180 ±9 v; prr = 120 ±5; Ra = 150 ohms; Rp = 100 ohms; Zm = 75.0 ohms; t = 3 (max); calibration resistor = 50 ohms	2.5	I	etd	---	---	---	---	76	---	v
----	Post-shock end points:											
1336	Heater-cathode leakage	Ehk = +25 Vdc	---	---	Ihk	---	---	---	---	20	---	μAdc
		Ehk = -100 Vdc			Ihk	---	---	---	---	20	---	μAdc
1261 (J)	Anode voltage		---	---	Ebb	---	---	---	---	26	---	Vdc

METHOD	REQUIREMENT OR TEST	CONDITIONS	AQL (PERCENT DEFECTIVE)	INSP LEVEL OR CODE	ALLOWABLE DEFECTIVES PER CHARACTERISTIC		SYMBOL	LIMITS		UNIT
					1 ST SAMPLE	COMBINED SAMPLES		MIN	MAX	
	Quality conformance inspection, part 3									
1506	Heater-cycling life test	Ef = 7.0 V; 1 minute "on", 4 minutes "off"; Eb = Ec1 = Ec2 = 0; Ehk = 18 Vac	2.5	Code	----	---	---	2,500	---	Cycles
1521	Survival-rate life test	Ib = 16 mAdc; ib = 100 ma; Rg1 = 50,000 ohms (min); Epp = 350 Vac; Ehk = -100 Vdc, +25 Vdc; Rp = 5,000 ohms (approximately) TA = room See notes 4 and 5	---	---	---	---	---	---	---	---
(J) ----	Survival-rate life test end point:									
1201	Short and discontinuity detection (inoperatives)		0.65	II	---	---	---	---	---	---
1501	Intermittent life-test operation									
1521	Survival-rate life test	tk = 10 (max); TA = 100°C (min) See notes 4 and 5	---	---	---	---	---	---	---	---
	Intermittent life-test end points: (500 hours)									
	Inoperatives	See note 2	---	---	1	3	---	---	---	---
3241	Heater current		---	---	2	5	If	138	164	mA
3201	Grid voltage (1)		---	---	1	3	Ecc1	-0.8	-5.0	Vdc
1261	Anode voltage		---	---	1	3	Ebb	---	70	Vdc
1231	Pulse emission		---	---	2	5	etd	---	100	v
1336	Heater-cathode leakage	Ehk = +25 Vdc Ehk = -100 Vdc	---	---		5	Ihk Ihk	--- ---	20 20	μAdc μAdc
---- ----	Total defectives		---	---	4	8	---	---	---	---
(J)	Periodic check tests									
1031A	Variable-frequency vibration	No voltages See note 7	10.0	---	---	---	---	---	---	---
1031A	Sweep-frequency vibration	10G; variable frequency See note 7	6.5	---	---	---	---	---	---	---
----	Post-sweep-frequency vibration test end points:									
1336	Heater-cathode leakage	Ehk = +25 Vdc Ehk = -100 Vdc	---	---	---	---	Ihk Ihk	--- ---	20 20	μAdc μAdc
1261	Anode voltage		---	---	---	---	Ebb	---	26	Vdc

NOTES:

(J) 1. See "Reduced pressure (altitude) rating" and altitude, maximum peak voltage in the basic document.

2. This test is to be the first test performed at the conclusion of the holding period.

3. Grid current or the appearance of ionized gas shall not be considered as indications of air leakage.

4. Adjust phase of grid voltage to provide start of conduction at the peak of the anode voltage.

5. Cycling of heater-cathode voltage shall be 30-seconds positive and 30-seconds negative.

6. Post-shock and sweep-frequency vibration-test end points, as specified herein, shall be the post-variable-frequency vibration end points.

(J) 7. This test shall be conducted on the initial lot and thereafter on a lot approximately every six months. When one lot has passed, the 6-month rule shall apply. In the event of a lot failure, the lot shall be rejected and the succeeding lots subjected to this test until a lot passes. MIL-STD-105 sample size code letter F shall apply.

8. Sampling procedure shall be in accordance with MIL-STD-105 with sample size determined by lot size, except the minimum sample size shall be as specified below. Use the AQL and inspection level specified for each individual test item to determine the minimum sample size code letter. The maximum lot tolerance percent defective (LTPD), included below, is for purposes of information and is defined as the percent defective in the lot for which the probability of acceptance is 0.10 as obtained from the operating characteristic curves in MIL-STD-105.

AQL (percent defective)	Inspection level	Maximum LTPD	Minimum sample size code
0.4	II	3.5	L
0.65	II	4.4	L
2.5	I	13.0	H

Custodians:

Army - EI
Navy - EC
Air Force - 85

Preparing activity:

Air Force - 85

(Project 5960-2751)

Review activities:

Army - EL
Navy - EC, SH
Air Force - 17, 80

User activities:

Army - EL
Navy - AS, OS, MC, CG
Air Force - 11, 19